



HRMS™ & Hospitals

**An Environmental Disinfection System
to Combat Healthcare-Associated Infections**

Eddy Coenye, International Business Development
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Who Are We?



American
Green Technology



Manufacturer of the Health Risk Management System (HRMS). The patented Health Risk Management System (HRMS) is one of the Company's premier product offerings. The HRMS combines an energy efficient light fixture with a UVC / Air circulation system, clinically proven to destroy pathogens that cause healthcare-associated infections.

Headquarters

52129 SR 933
South Bend, IN USA

Manufacturing

1360 Industrial Park Dr.
Clarksdale, MS USA

Healthcare News Around the Globe

Negative publicity is bad for business

US News NEWS

News Opinion National Issues Special Reports Cartoons Photos Videos U.S. News

Ken Walsh's Washington Newsgram Washington Whispers At the Edge The Ballot 2014 Data

CDC Warns of MERS

Middle East respiratory syndrome has killed a third of those who caught the virus.

HEALTH ADVISORY:
Middle East Respiratory Syndrome (MERS)

Going to the Arabian Peninsula?
A new disease called MERS has been identified in some countries.
The risk to most travelers is low, but you should take these steps to protect yourself.

Newsweek U.S. WORLD BUSINESS TECH & SCIENCE

TECH & SCIENCE

Climate Change Poised to Make Infectious Disease Outbreaks More Frequent

BY ZOË SCHLANGER 2/16/15 AT 2:53 PM



DEATHS PER YEAR

DRUG RESISTANCE 2014	0.7 MN
CANCER 2014	8.2 MN
DRUG RESISTANCE 2050	10.0 MN

NEW STUDY RAISING ALARMS ABOUT "SUPERBUGS"

LIVE CNN

Healthcare News Around the Globe

Negative publicity is bad for business

LATIN AMERICAN
Herald Tribune

Catholic Online
INFORM - INSPIRE - IGNITE

Around 30 Countries Exposed to Ebola Due to Poor Healthcare Systems

LONDON – Around 30 poor countries severely lacking capacity in their healthcare systems are exposed to epidemics such as Ebola, according to a new report from Save the Children.

The NGO documents the quality of public healthcare systems, using indicators such as the number of health workers and neonatal mortality rates in the world's 72 poorest countries.



TB A Growing Problem In Latin America



Who/what is coming into your hospital?

You never know who is walking through your doors



**“First, do no harm...I will prevent disease whenever I can, for prevention is preferable to cure...”
- Hippocratic Oath (excerpts) -**



Healthcare-Associated Infections

A Growing Threat to Patients in the U.S.

A Growing Threat to **Patients**

- Every DAY, **ONE** out of TWENTY hospitalized patients has an infection caused by medical care
- Every YEAR, **2,000,000** people get antibiotic-resistant infections
- About **75,000** hospital patients died in 2011 from HAIs during their hospitalization
- A recent CDC threat report on antibiotic resistance highlighted **18 pathogens** that are outsmarting our best antibiotics



Healthcare-Associated Infections

A Growing Threat to Hospitals in the U.S.



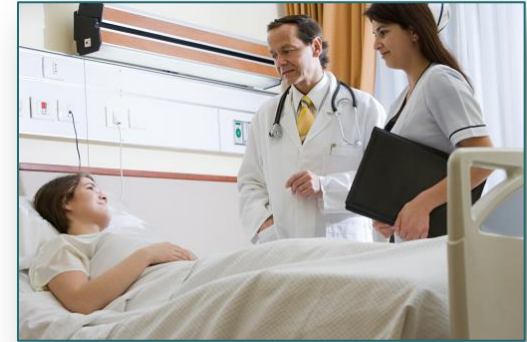
A Growing Threat to Hospitals

- The economic burden of HAIs may be as high as **\$45 BILLION** per year in the U.S.
- Centers for Medicare & Medicaid Services (CMS) *tying payments to quality of services* not just number
- *HAIs make up large component* of CMS payment reduction programs
- Endless intrusion of HAIs into wards and ORs *stymies even the most modern hospitals* with best equipment and personnel



Healthcare-Associated Infections

A Growing Threat to Patients in Latin America



A Growing Threat to **Patients**

- **Hundreds of millions of patients** worldwide are impacted by HAIs
- **16% of 147 low- to middle-income countries (LMICs)** survey HAIs
- **Burden in LMIC countries much higher** than in high income nations
- **ICU patients and newborns are at the greatest risk** for HAIs in LMICs
- **HAIs in ICU patients are 2 to 3 times more** in LMICs than the 30% in HICs
- **Newborns face 3 to 20 times higher risk** of HAIs in developing countries

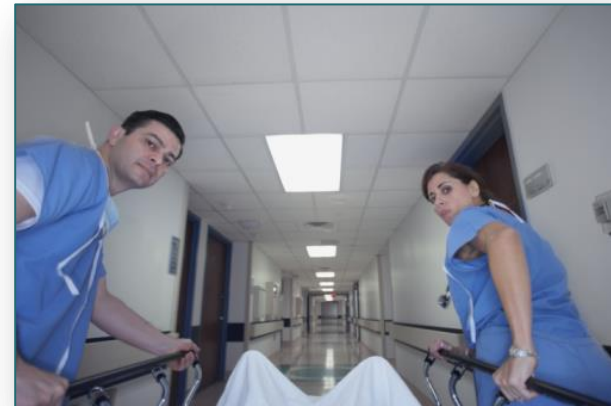
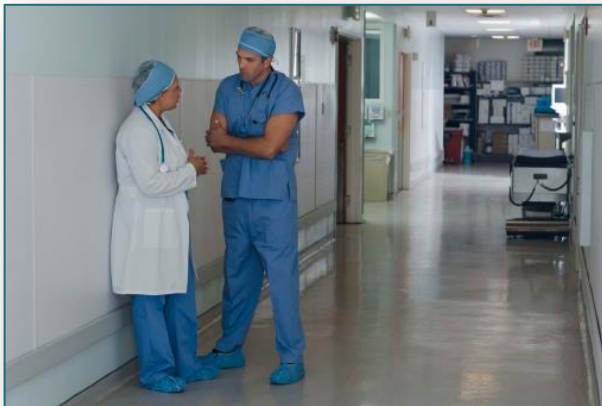


Healthcare-Associated Infections

A Growing Threat to Hospitals in Latin America

A Growing Threat to Hospitals

- Pooled prevalence was 15.5% HAIs in developing nations (14% Brazil)
- Surgical site infections (SSIs) account for 29% of all infections
- Increased length of stays of 5-29 days for developing countries
- Excess mortality rates in 173 ICUs in Latin America, Asia, Africa, and Europe from HAIs from 18% to 23%
- Cost per HAI in Latin America vary between \$2,255 and \$12,155 depending on type and country



Toward Infection Control

Major Components of an Effective Infection Control Program

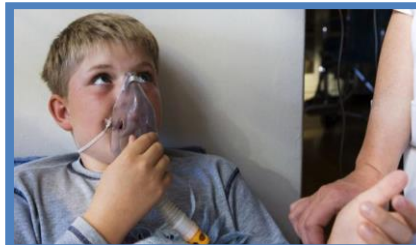
Nosocomial Infection Control



Surface
Disinfection &
Hand Sanitizing



Procedural
Controls &
Isolation



Treatment,
Prophylaxis &
Vaccination

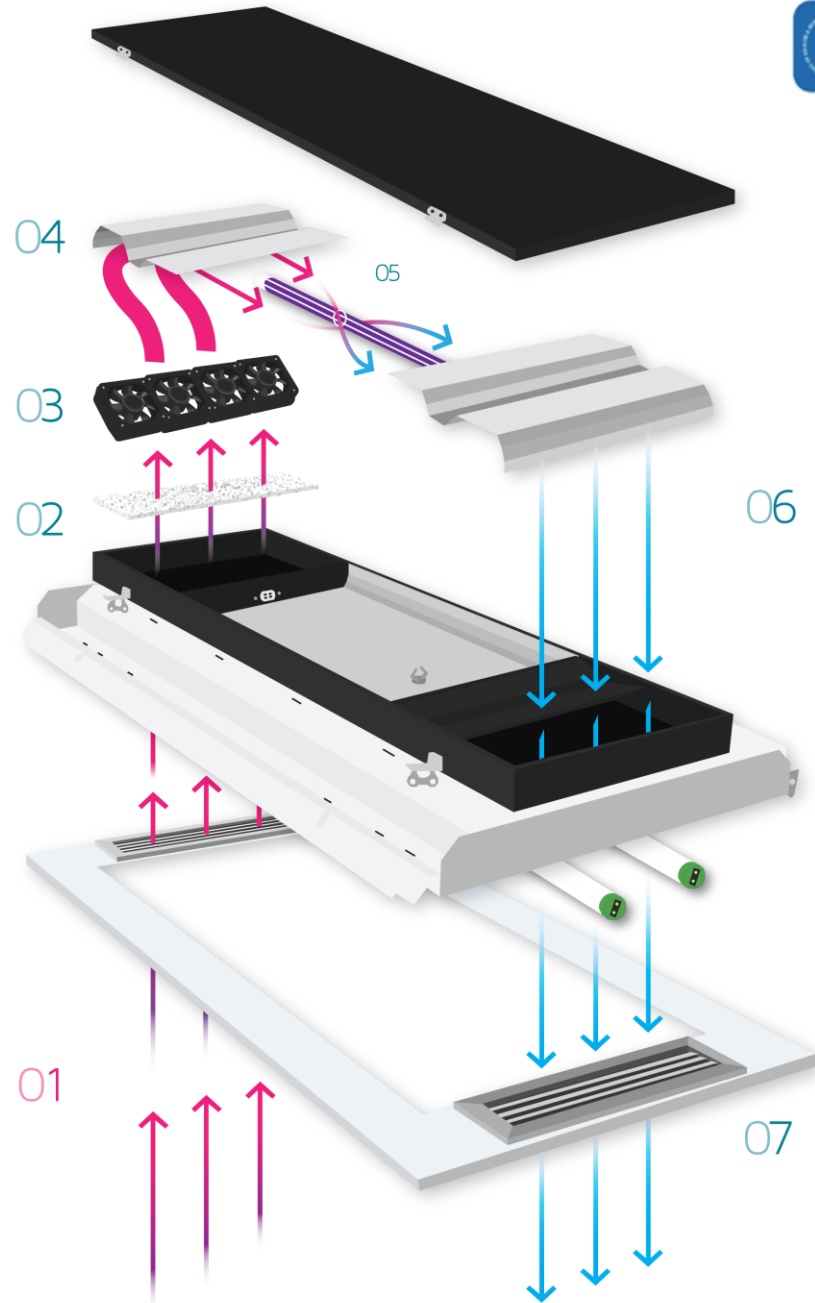


Engineering
Controls & Air
Disinfection

How the HRMS Works



**Pressure
Filtration
Purification
Dilution**





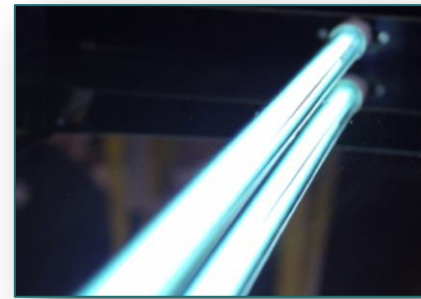
**4 LINES OF
DEFENSE**

Health Risk Management System

Why Consider HRMS for Your Infection Prevention Program

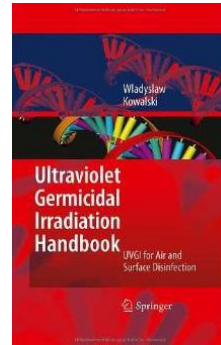
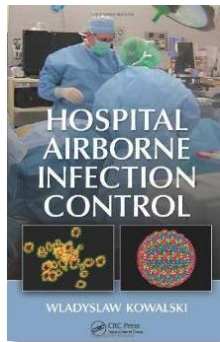


UVC used in hospitals to control infections since the 1930's	New application of a proven technology allowing for 24/7 use in occupied room
All day, every day, air disinfection helps keep surfaces clean	Continuous operation will significantly reduce the room bioburden over time
Bioburden reductions result in lower infection rates	Energy efficient light fixtures can contribute to LEED-EB certification
No additional staff requirements for system operation	Virtually maintenance free (15 minutes per year)
Technology solution requires NO: new protocol, training, or compliance	Lowest cost alternative Promising immediate results
High return on investment (ROI) Through HAI reductions	Results demonstrated Through no-risk pilot program



HRMS Against Pathogen Contamination

100% Single Pass Removal Rate Against 30+ HAI Causing Pathogens



“It has become increasingly clear that airborne and surface-borne HAIs are inter-related and that **air contamination contributes to surface contamination and vice-versa**. Therefore any disinfection system such as the **HRMS** that **addresses both air and surface pathogens, will likely have the most effectiveness in reducing HAIs**. The cost-effectiveness of the HRMS makes it one of the best, **if not the best, choice today for hospitals that must deal with HAIs on limited budgets.**”

Dr. Wladyslaw J. Kowalski

Microbe	Type
Clostridium difficile spores	Bacteria
Ebola virus	Virus
Enterobacter cloacae	Bacteria
Enterococcus / VRE	Bacteria
Flu virus	Virus
Group A Streptococcus	Bacteria
H1N1	Virus
Haemophilus parainfluenzae	Bacteria
Klebsiella pneumoniae	Bacteria
Legionella pneumophila	Bacteria
Measles virus	Virus
Mumps virus	Virus
Pseudomonas aeruginosa / CRPA	Bacteria
RSV	Virus
SARS	Virus
Serratia marcescens	Bacteria
Staphylococcus aureus / MRSA	Bacteria
Staphylococcus epidermis	Bacteria
Tuberculosis / MDR TB	Bacteria
Whooping cough	Bacteria

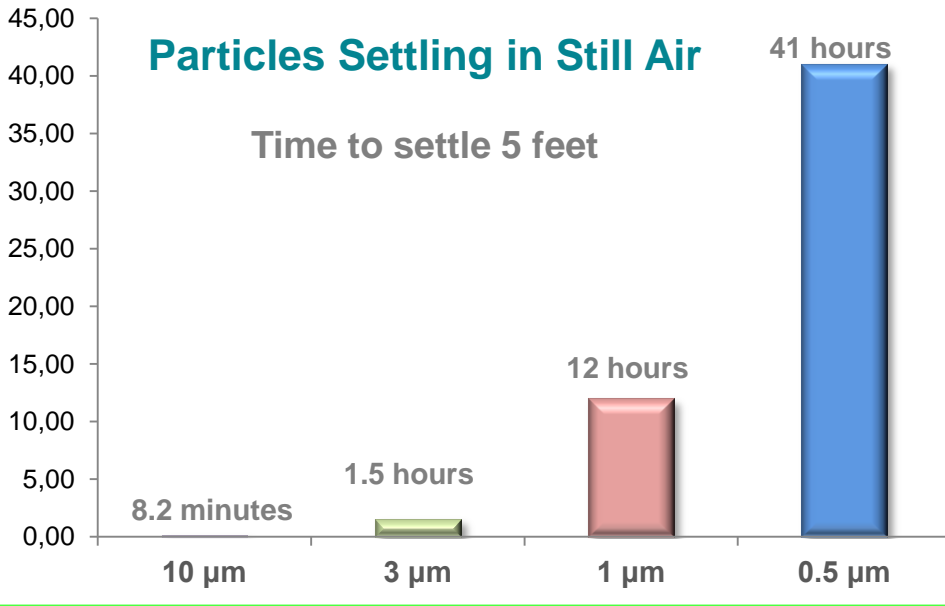
MERV 6 Filter + UV Dose, 198 J/m²

Nosocomial Pathogen Aerosols

Tiny Particles or Droplets Suspended in Air

Overall Scenario

Primary source – human or environ.
Aerosol transport - based on airflow
Aerosol loss to surfaces – contact risk
Release from surfaces - resuspension



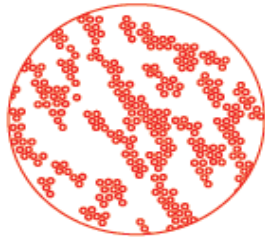
Baron, Paul, Generation and Behavior of Airborne Particles (Aerosols), NIOSH / CDC
 Kowalski, Wladyslaw, Report on Performance of Health Risk Management System

Microbe	Type	Size - µm
Paravovirus B19	Virus	0.022
Rhinovirus	Virus	0.023
Coxsackievirus	Virus	0.027
Norwalk virus	Virus	0.029
Rubella virus	Virus	0.061
Rotavirus	Virus	0.073
Reovirus	Virus	0.075
Adenovirus	Virus	0.079
Influenza A virus	Virus	0.098
Coronavirus (SARS)	Virus	0.110
Measles virus	Virus	0.158
Mumps virus	Virus	0.164
VZV	Virus	0.173
Mycoplasma pneumoniae	Bacteria	0.177
RSV	Virus	0.190
Parainfluenza virus	Virus	0.194
Bordetella pertussis	Bacteria	0.245
Haemophilus influenzae	Bacteria	0.285
Proteus mirabilis	Bacteria	0.494
Pseudomonas aeruginosa	Bacteria	0.494
Legionella pneumophila	Bacteria	0.520
Serratia marcescens	Bacteria	0.632
Mycobacterium tuberculosis	Bacteria	0.637
Klebsiella pneumoniae	Bacteria	0.671
Corynebacterium diphtheriae	Bacteria	0.698
Streptococcus pneumoniae	Bacteria	0.707
Neisseria meningitidis	Bacteria	0.775
Staphylococcus aureus	Bacteria	0.866
Staphylococcus epidermis	Bacteria	0.866
Streptococcus pyogenes	Bacteria	0.894
Clostridium perfringens spores	Bacteria	1.000
Mycobacterium avium	Bacteria	1.118
Nocardia asteroides	Bacteria	1.118
Acinetobacter	Bacteria	1.225
Enterobacter cloacae	Bacteria	1.414
Enterococcus	Bacteria	1.414
Haemophilus parainfluenzae	Bacteria	1.732
Clostridium difficile spores	Bacteria	2.000
Aspergillus spores	Fungi	3.354
Cryptococcus neoformans spores	Fungi	4.899
Rhizopus spores	Fungi	6.928
Mucor spores	Fungi	7.071
Fusarium spores	Fungi	11.225
Blastomyces dermatitidis spores	Fungi	12.649

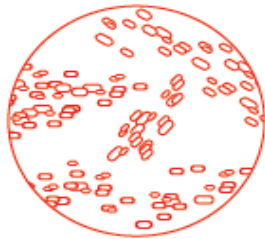
Conclusive Laboratory Test Results



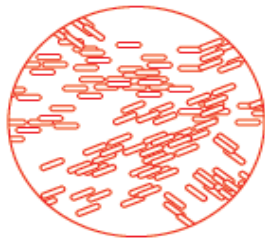
MRSA
99.8%
Elimination



**STAPHYLOCOCCUS
AUREUS**
99.9%
Elimination



**SERRATIA
MARCESCENS**
100%
Elimination



**BACILLUS
ATROPHEUS**
99.7%
Elimination

HIGHLIGHTS

MRSA was eliminated to 99.7% after the first hour.

Serratia was eliminated to 100%.

The number of pathogens used in tests was 800 times the amount that would be found in a hospital setting.

99.8%

AVERAGE ELIMINATION

“ The HRMS, along with typical engineering and housekeeping efforts, could prove to be a powerful and relatively low maintenance regimen in reducing or eliminating Healthcare-associated Infections (HAIs). ”

Suzanne Blevins, B.S., SM(ASCP) Lab Director and Principal for Aerobiology Laboratory Associates, Inc.

Onsite Validation Test Results

Baylor Medical Center Dallas Uptown

- High removal rates of nosocomial and environmental pathogens including bacteria and fungi from the air.
- The risk of infection in areas where the HRMS is installed would be considerably lower.
- Reduces the number of Colony Forming Units (CFU) on surfaces as demonstrated by the **reduction and control of surface microbe concentrations**.
- Maintains air quality at a stable level even during the busiest hours of facility operation.



Report for Baylor Medical Center Uptown Validation Study Using HRMS System by Suzanne Blevins Laboratory Director, Christopher Blevins, COO, Aerobiology Laboratory Associates, Incorporated, validation study done 04.19.2014, date submitted 05.08.2014.

IMSS, La Raza Hospital, Mexico City



- Dr. Laura Lopez Pelcastre, Head of Central Laboratory HECM, National Medical Center, Government of the Republic of Mexico
- Against *Staphylococcus epidermidis*
- 98% neutralization of Colony Forming Units (CFU) from the air after four hours
- Surface sampling showed 88% reduction in CFU over 24 hour test period



Instituto Mexicano del Seguro Social, Hospital de Especialidades, Del Centro Medico Nacional "La Raza," Dr. Ernesto Alonso Ayala López, Director General de la U.M.A.E., Dra. Laura López Pelcastre, Jefa de Laboratorio Central HECMN "La Raza," 07.08.2014.

HRMS Peer Review Sites



Johns Hopkins Suburban Hospital, Bethesda, MD
Medical acute units



Norton Hospital
Louisville, KY



St. Vincent Charity Medical Center
Cleveland, OH

HRMS Installations

Across Latin America



Panama Government Hospital System



IMSS La Raza Hospital Mexico



La Raza Hospital
ICU

HRMS Installations

In Dubai, United Arab Emirates, 1-9-2015



Al Garhoud Private Hospital
Dubai, UAE
Male treatment rooms



HRMS Installations

In the Kingdom of Bahrain, 2-11-2015



Hard surface mount install

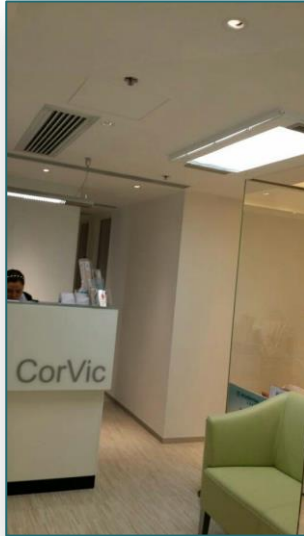


King Hamad University Hospital
Bahrain

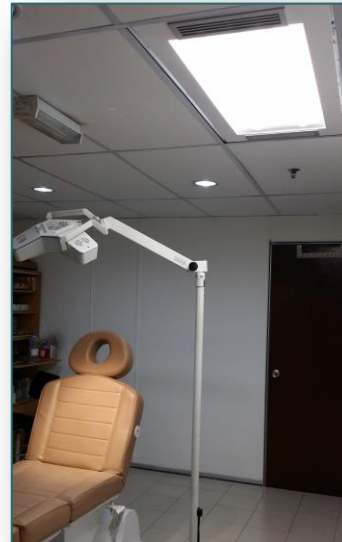
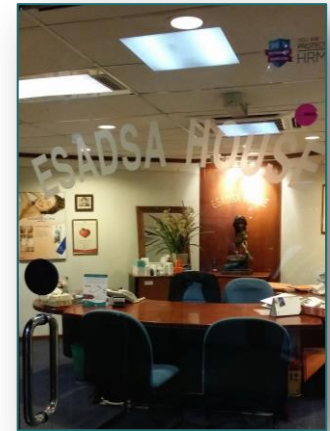
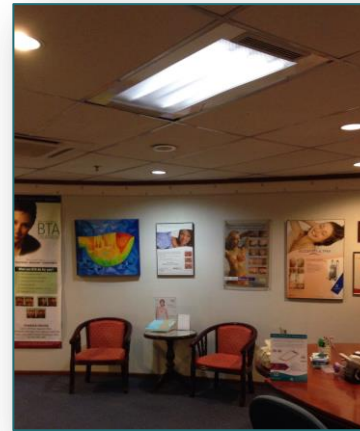


HRMS Installations

In Malaysia and Hong Kong



Corvic Plastic Surgery Center, Hong Kong
Treatment rooms and waiting room



Esadsa House, Malaysia
Reception, waiting room
and 2 operating theaters

“Disinfecting the air is critical to protecting patients from the transference of harmful pathogens. Too often we have seen crises arise from lack of resources like the HRMS. I’m thrilled to have this technology in the Esadsa House.”
Dr. Victor Cheong,
Chief Surgeon

HRMS Installations

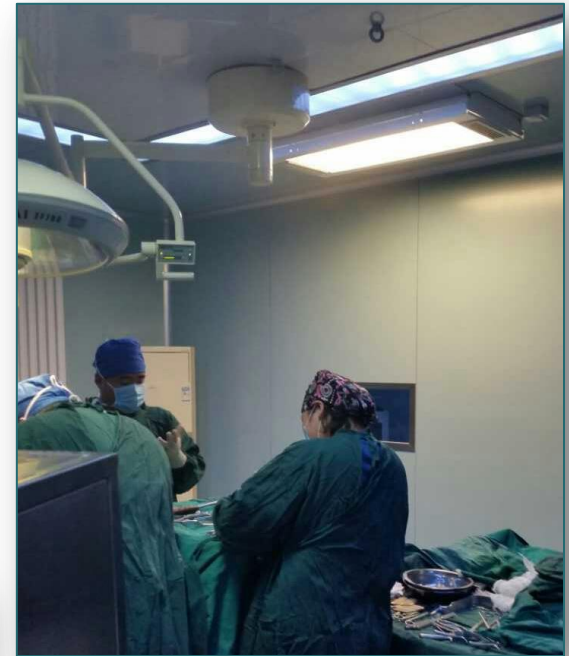
In Malaysia, Thailand and China



Sungai Buloh Hospital
Malaysia
Ebola room



Bhumibol Adulyadej Hospital
Thailand
Oncology Department



Boading CiHe Hospital
Hebei, China
Surgical suite

Where can the HRMS Be Most Effective in a Hospital?

High risk areas

- ICU
- NICU
- SICU
- Isolation room
- Surgical recovery
- Burn units
- Nurses stations
- ER waiting room
- Bronchoscopy suites
- Autopsy
- Central supply
- Sterile core
- Clinics
- Toilet rooms
- Laboratories
- Decontamination room
- Soiled utility room





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Who is Quimica MediQ?



- Leader in the healthcare supply market.
- Well regarded for their commitment and customer-centric approach.
- Comprised of a staff with over 40 years of experience in the industry.
- Exclusive distributor of the HRMS in Uruguay.
- Authorized representative in the Uruguayan market for some of the largest medical equipment companies like Konica Minolta, Sony, Bracco Group, Medentech, MEIKO, among others.

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